

## SILURO-DEVONIAN MOLLUSCA FROM MARBLE CREEK, THOMSON RIVER, VICTORIA

By JOHN A. TALENT and G. MAXWELL PHILIP

[Read 9 June 1955]

### Abstract

Two new genera and eight new species of gastropods, four new species of pelecypods, and one new species of nautiloid are described from the two Siluro-Devonian crinoidal limestones at Marble Creek, Thomson River, Victoria. A homonym in the genus *Conocardium* is corrected.

### Introduction

The limestone deposits referred to in this paper are two lenses of crinoidal limestone occurring on the eastern side of the Walhalla synclinorium, a wide belt of Siluro-Devonian sediments in central-eastern Victoria. Both deposits were formerly quarried for building stone, and are known locally as the Toongabbie Marble Quarries. The quarries have not been worked for over fifty years and consequently proved difficult to find in the heavily timbered country along the Thomson River. For this reason we have included a map (Fig. 1) which locates the quarries in relation to present roads and recognizable jeep tracks, mapped by pace and compass.

Collections were made from both quarries during field trips in 1953 and 1954. This paper covers the description of the gastropods, pelecypods and nautiloid of the fauna and gives notes on location and previous literature.

### Previous Literature

The key literature on the Walhalla synclinorium is listed by Thomas (1942), whereas the sole reference giving significant data on the Marble Creek limestone is that of Kitson (1925).

Murray (1878) was apparently the first to comment on the Marble Creek limestone. He considered this occurrence, as well as those at Cooper's Creek and Deep Creek, Walhalla, to represent limestone outliers resting on the upturned edges of Silurian rocks. Murray went on to quote McCoy as saying, "This limestone contains an abundance of large crinoid stems of the *Actinocrinus* type, and some traces of Gasteropoda, apparently of the genus *Acroculia*, too imperfect to render determination possible, and a fragment of Bellerophon." McCoy was unable to reach any conclusion as to the age of the rock from the meagre collection available to him.

Newbery (1882) analysed a sample of Toongabbie limestone and stated it to have the abnormally high percentages of 18.19% magnesia and 20.29% silica. However, analyses quoted by Kitson (1925, p. 446) show the proportion of magnesium carbonate to be of the order of 1% to 2%, a quite normal figure for a crinoidal limestone. Spot-testing for dolomite has failed to show any evidence of dolomitization in either of the two occurrences.

Kitson (1925) described the two quarries and disagreed with the earlier interpretation by Murray. He proved the two limestone deposits were almost certainly lentiles "interstratified with Silurian slates" rather than unconformable outliers.

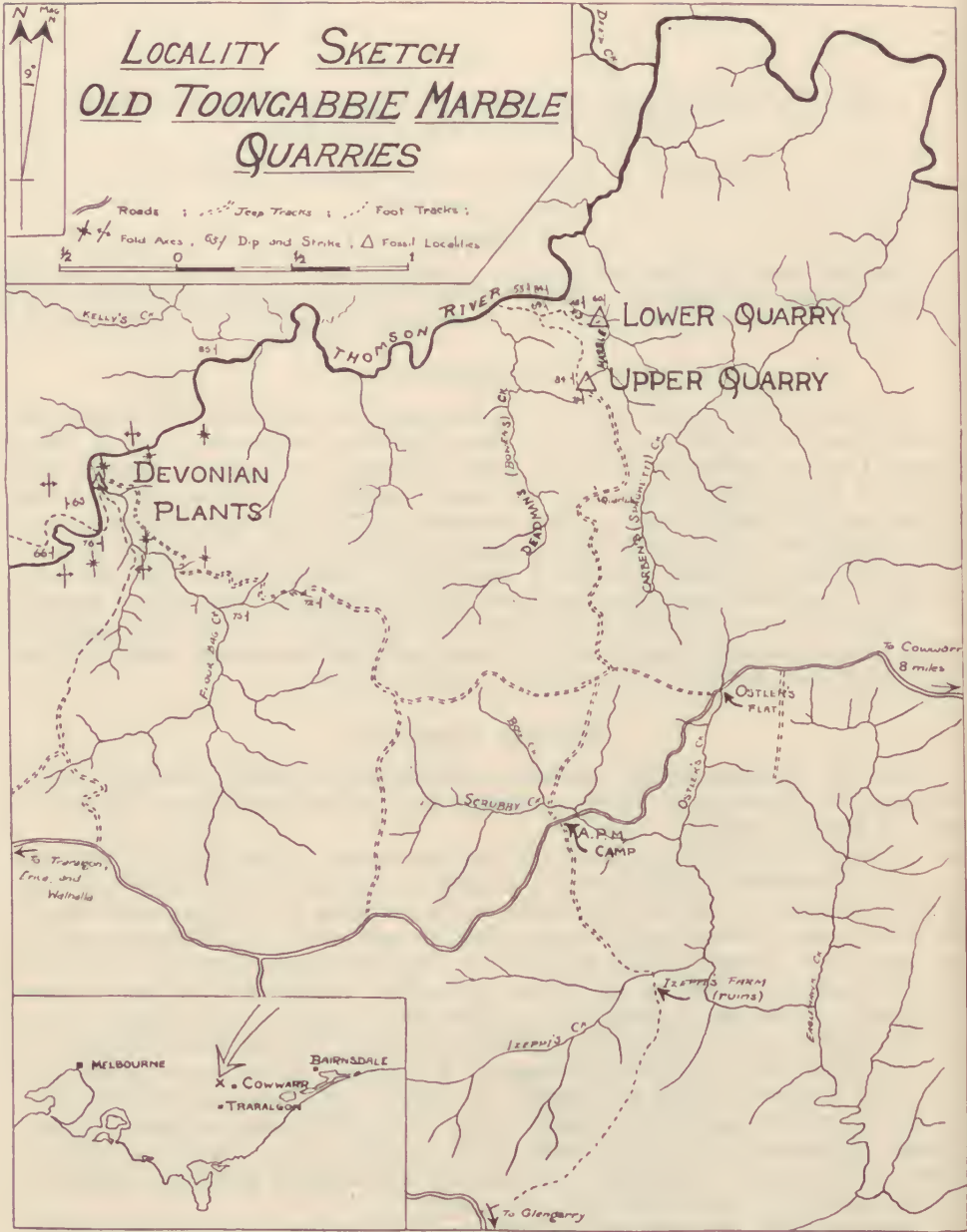


FIG. 1.—Locality sketch.

He regarded this limestone-conglomerate association to be a repetition by folding of the Cooper's Creek limestone-conglomerate belt which forms the base of the Walhalla Group.

Chapman (1907, pp. 73 and 78) listed rough generic determinations of fossil fragments collected by Kitson, but did not contribute towards solving the problem of the age of these limestones.

### Systematic Descriptions of Gastropods

#### Genus *Ostlerina* n.gen.

*Definition.* Narrowly phaneromphalous naticiform gastropods, with small spire and comparatively large body whorl, without a sinus in the outer lip, and ornamented only by growth lines, nucleus simple, dextral.

*Type species.* *Ostlerina delicata* n.sp.

*Discussion.* The phaneromphalous *Ostlerina* is readily separable from previously described naticiform genera, the bulk of which, such as *Praenatica*, *Platyostoma* and *Naticonema*, are anomphalous by nature. The fine growth line ornament of *Ostlerina* distinguishes it from other phaneromphalous naticiform general with which it could otherwise be compared—*Himantonia* has oblique, rounded costae, whilst *Naticella*, considered by Knight to be probably minutely phaneromphalous, has an ornament of "obscure, irregular, wavy, revolving lirae, and irregular very slightly fasciculated growth lines." *Ostlerina* can be compared with some species referred to *Platyceras*, but all specimens of *Ostlerina* so far collected are not unrolled even in what are apparently gerontic stages.

The name is derived from Ostler's Flat, the nearest cleared land to the old quarries from which the specimens were collected.

#### *Ostlerina delicata* n.sp.

(Pl. VI, figs. 1-4; Figs. 2 and 3)

*Description.* Somewhat explanate, naticiform, narrowly phaneromphalous gastropods of moderate size, with very small spire and comparatively large body whorl. Whorl profile moderately well arched between sutures, the final whorl being rather flatly arched on the upper half, more steeply arched in the centre, and rather sharply rounded on the base. Sutures incised, but not deep. Nucleus seemingly simple and dextral. Ornamentation of slightly irregular growth lines, which may coarsen in gerontic stages. Outer lip without sinus and thus no tendency towards generation of a selenizone.

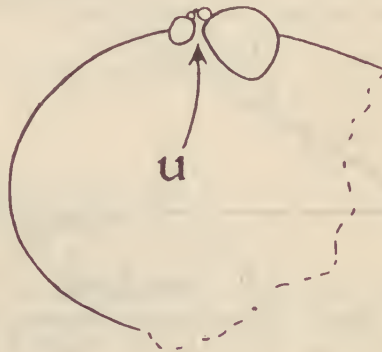


FIG. 2.—*Ostlerina delicata*. Section of paratype M.U.G.D. 2178 from Lower Quarry,  $\times 2$ , showing umbilicus (u).

*Measurements.* Only fifteen specimens were available for measurement and few of these showed a preserved outer lip. Unfortunately the shape does not lend these specimens to measurement. Results are plotted as Fig. 3.

## Upper Quarry

M.U.G.D. No.	2166	2272	2284
Height (mm.)	12.5	7	5.5
Length (mm.)	21	12.5	8.5

## Lower Quarry

M.U.G.D. No.	2164	2165	2179	2180	2285	2286	2287	2288
Height (mm.)	15.5	11	18	22	8	25	5	8
Length (mm.)	25.5	22	30.5	35	9	40	9.5	14

M.U.G.D. No.	2289	2290	2291	2292
Height (mm.)	6.5	2.8	3.5	4.2
Length (mm.)	10	5.8	6.4	7.5

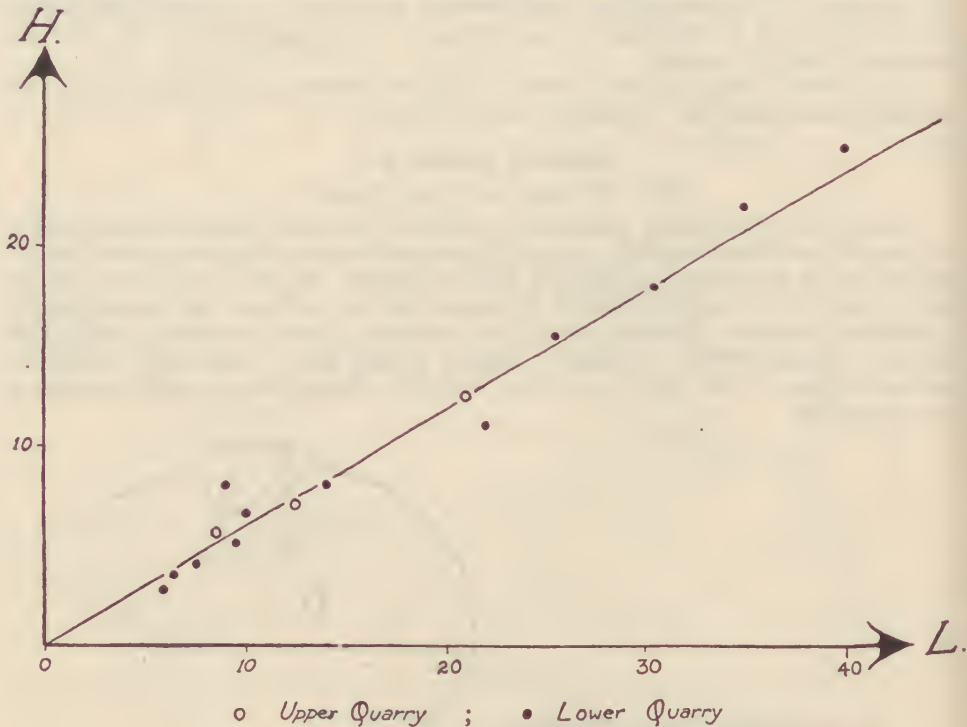


FIG. 3.—*Ostlerina delicata*. Relation of height of shell to length of fifteen measured specimens.

*Types.* Holotype, M.U.G.D. 2164; Paratypes 2165, 2178 (sectioned), and measured specimens M.U.G.D. 2166, 2272, 2284 (Upper Quarry), M.U.G.D. 2164, 2165, 2179, 2180, 2285-92 inclusive (Lower Quarry).

*Discussion.* The surface ornament of *O. delicata* is very similar to that of *Strophostylus gregarius* Perner. Here, however, the comparison ends, as *Strophostylus* is anomphalous, whereas *O. delicata* is phaneromphalous. "*Diaphorostoma incisum*" Chapman (1916) may be synonymous, but requires study of topotypic material before any assessment can be made.

*Occurrence.* Upper Quarry (relatively rare), and also Lower Quarry (moderately common).

#### Genus *Cowwarrella* n.gen.

*Definition.* Small phaneromphalous gastropods having virtually rectangular whorl section; outer lip without sinus but produced into a tongue-like anteriorly-directed projection; ornamentation of growth lines only; nucleus simple, dextral.

*Type species.* *Cowwarrella cylindrica* n.sp.

The external appearance of this genus is sufficiently distinctive to defy close comparison with any previously described Paleozoic genus known to the authors. The name is derived from Cowwarr, the nearest township to the quarries.

#### *Cowwarrella cylindrica* n.sp.

(Pl. VI, figs. 12, 13, 14)

*Description.* Rather small, phaneromphalous gastropod of about two volutions. Whorl section virtually rectangular. Outer lip without a sinus. External sutures deep. Whorl profile between sutures nearly flat and sub-horizontal above, with an almost right-angled shoulder, and then running vertically for a distance of approximately four times the width of the upper sub-horizontal surface of the whorl to another more rounded, but almost right-angled, shoulder. Base of the whorl horizontal, and equal in width to the upper surface, but more rounded than it. Umbilicus obscured by hard matrix preventing preparation to reveal umbilical structures or the profile of the inner side of the whorl. Profile of inner side of whorl inferred to be vertical from the dominant regularity of the shell. Nucleus simple, dextral. Outer lip, as inferred from growth lines, passing radially from the external suture to the upper right-angled shoulder, then bending fairly sharply forwards, into a low U-shaped forwardly directed lobe. On the base, growth lines, and consequently the outer lip, deflected backwards. Ornamentation restricted to low, rounded, variable, irregularly spaced growth lines. Shell material thin, and of unknown structure.

*Measurements.* Maximum height 12.5 mm., width 11 mm.

*Type.* Holotype M.U.G.D. 2169.

*Occurrence.* Lower Quarry (rare).

#### Genus *Tremanotus* Hall, 1865

#### *Tremanotus cyclocostatus* n.sp.

(Pl. VI, figs. 11, 15; Pl. VII, figs. 16, 17; Fig. 4)

*Description.* Moderately large, widely phaneromphalous planispiral gastropod, of originally about five whorls. Outer lip with shallow sinus culminating at mid-whorl in a series of regularly spaced tremata. Whorl profile sub-oval, being

moderately concave on the inner side; sutures seemingly very sharply defined; nucleus unknown. Outer lip, as inferred from the growth lines, with widely V-shaped sinus over the entire outer surface. Sides of sinus running at about  $25^\circ$  from the vertical and culminating medially in a peculiar narrow pseudo-selenizone. Pseudo-selenizone consisting of a row of sub-rectangular tremata, each surrounded by a slight wall with growth lines running up the walls from the sides, spaces between tremata having growth lines bent strongly backwards towards the preceding tremata. Ornamentation of about 24 somewhat sinuous, unevenly spaced, rounded, revolving costellae, becoming more sinuous away from the row of tremata, which are parallel. Costellae averaging about half the width of the intervening furrows. Transverse ornamentation of closely spaced, fine growth lines, with regular coarser growth lines, the combination of transverse and revolving ornaments giving the surface a characteristic reticulate appearance. Shell moderately thin, and of unknown structure.

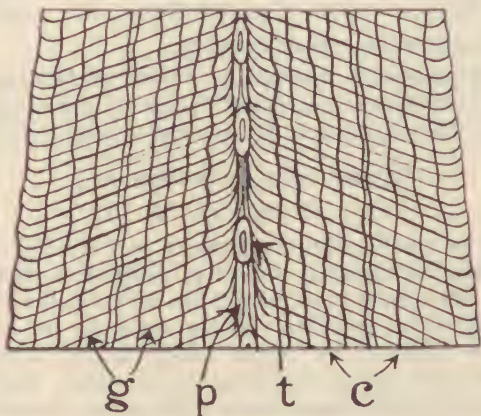


FIG. 4.—*Tremanotus cyclocostatus*. Diagrammatic representation of surface ornament,  $\times 5$ .  
c. revolving costellae; g. growth lirae; p. pseudoselinizone; t. tremata.

*Types*. Holotype M.U.G.D. 2279; Paratype M.U.G.D. 2167.

*Discussion*. *Tremanotus cyclocostatus* is smaller and less rapidly expanding than *T. pritchardi* Cresswell or *T. longitudinalis* Lindstrom. The fragment of *Bellerophon* identified by McCoy, and referred to by Murray (1878, p. 49), could possibly have belonged to *Tremanotus cyclocostatus*.

*Measurements*. Maximum width of holotype 25 mm.; maximum height of whorl is 12.5 mm.

*Occurrence*. Lower Quarry (rare).

Genus *Coelocaulus* Oehlert, 1888

*Coelocaulus* sp.

(Pl. VII, fig. 18)

*Description*. Medium sized, high spired, many whorled, narrowly phaneromphalous gastropod, with probably ten or twelve whorls approximately one-third as high as their diameter. Suture moderately shallow; whorl profile gently arched

between sutures. Outer lip and columellar lip unknown. Ornamentation probably of very fine growth lines which have not been preserved on the specimens.

*Measurements.* The height of the better preserved of the two specimens (M.U.G.D. 2172) is 26.5 mm., but it has only six whorls. It would have been about 40 mm. high if the spire had been preserved. The pleural angle is approximately 13°.

The second specimen (M.U.G.D. 2177) has only five whorls, and is 14.5 mm. high. Its original height would have been about 25 mm.

*Discussion.* Only two specimens have been collected, and both are too poorly preserved to be accurately identified. Both are completely filled with coarsely crystalline calcite, and fail to show surface ornament. Chapman (1916, p. 86) mentions *C. brazieri* Etheridge from Marble Creek.

*Occurrence.* Both specimens were collected in the Upper Quarry.

#### Family PLATYCERATIDAE Wenz

The bulk of the several hundred described species of Platyceratidae have been referred to *Platyceras* Conrad or *Orthonychia* Hall. Living examples of the closely analogous genus *Capulus* are known to vary in colour and form according to their immediate environment. By analogy the majority of the species of Platyceratidae, founded on minor surface irregularities, are probably invalid. However, in view of the general absence of stable characters which can be made use of for specific distinction, very little can be done at this stage to reduce the vast number of species.

For the purpose of the present discussion, we have referred those irregularly horn-shaped gastropods which have the nucleus and the first whorl in contact to the genus *Platyceras* Hall. We have not made use of the synonymous genus *Acroculia* Phillips, although the Termiers (1950, p. 4) have recently continued to use it for uncoiled, helicoidally twisted platyceratids.

The completely uncoiled genus *Igoceras* Hall has by some authors been regarded as a synonym of *Orthonychia* Hall, whereas other authors have considered them as discrete genera. Knight's (1941, pp. 160 and 221) genotype descriptions show that no ornament has been observed on the genotypes of *Orthonychia* whereas *Igoceras plicatum* (Conrad) has ornament of plications, fine lirae and growth lines. If the ornament of *Orthonychia* was known and considered to be significantly different from that of *Igoceras* there would be some basis for separation of the two genera. In the absence of such significant differences we have followed the procedure of considering *Igoceras* as a synonym of *Orthonychia*.

New species of platyceratids have been erected mainly on grounds of external morphology. We have searched the wide literature available to us and, being unable to place the several species, have decided on naming them. In spite of the extreme differences between each of the new platyceratid species, we do not deny the possibility that the extreme variation in external morphology known in platyceratids may even cover some of the newly erected species.

As has been mentioned before, the limestones consist mainly of the remains of crinoid stems. It is of considerable interest to note this as another case of close association between platyceratids and crinoids. Keyes (1889) made a careful study of twelve species of Carboniferous platyceratids living closely associated with crinoids and concluded that they lived a partly saprophagous life, like the living *Eulimidae*, and lived partly on nutrition brought their way by movement of the crinoid arms.

Genus *Platyostoma* Conrad, 1842*Platyostoma triangularis* n.sp.

(Pl. VI, figs. 5, 6)

*Description.* Small, low-spired naticiform gastropod, of about two rapidly expanding volutions. Whorl profile rounded for the first whorl, then becoming sub-triangular, with an acutely rounded shoulder near the upper suture, a comparatively flat sloping side, a sub-angular shoulder at the periphery, and a flattened base. Sutures very deep and V-shaped. Nucleus simple, dextral. Base anomphalous. Aperture sub-triangular, widest near the base. Outer lip, as inferred from growth lines, deflected backward from the suture into a very low, backwardly directed U-shaped re-entrant on the outer flattened surface, with forward convexity at the periphery, and deflected obliquely backwards again on the basal portion of the shell. Ornamentation of low, rounded growth lines.

*Measurements.* Width 11.5 mm.; height 6 mm.

*Type.* Holotype M.U.G.D. 2175.

*Occurrence.* Lower Quarry (rare).

Genus *Platyceras* Conrad, 1840*Platyceras decorum* n.sp.

(Pl. VII, fig. 21)

*Description.* Small irregular gastropod, of about one and a half whorls, with the nucleus and first whorl in contact and discoidally coiled, and the last whorl free, expanding relatively rapidly. Whorl section sub-circular, and somewhat flattened on the base. Apertural margin sinuous. Surface ornamented by a tendency to low swellings and sinuous growth lines parallel to the apertural margin. Shell thin and black.

*Measurements.* Two specimens referred to this new species have the following somewhat approximate measurements:

	Holotype	Paratype
Height	6.0 mm.	6.5 mm.
Width	6.5 mm.	6.5 mm.
Width of aperture	4.0 mm.	4.0 mm.
Height of aperture	3.8 mm.	3.6 mm.

*Types.* Holotype M.U.G.D. 2173. Paratype M.U.G.D. 2174.

*Occurrence.* Lower Quarry (occasional).

*Platyceras trirotundolobatum* n.sp.

(Pl. VII, figs. 26, 27)

*Description.* Moderately large, rapidly expanding, horn-shaped gastropod; nucleus not preserved, but initial coiling inferred from shape. Whorl section sub-circular at first, soon becoming characteristically sub-pentagonal, with strong rounded projections on three successive angles. Surface folded into three strong plications of semi-circular cross-section, running almost the length of the shell, and separated by comparatively flat areas, approximately twice as wide as the plications. Outer lip, as inferred from the ornamentation of growth lines, curving inwardly



at each semi-circular plication into a low U-shaped sinus, and outwardly again on each comparatively flat section between the plications, giving a low U-shaped, forwardly-directed tongue. Rate of growth under the beak slightly greater than half that in the line furthest from the beak. Shell dextral, very thin, and of unknown structure.

*Measurements.* Maximum apertural width 20.3 mm.; approximate shell length 50 mm.; height 20.5 mm.

*Type.* Holotype M.U.G.D. 2168.

*Occurrence.* Lower Quarry (rare).

#### **Platyceras** sp.

*Description.* Small, asymmetric, rapidly expanding platyceratid gastropod, differing markedly in general configuration from the other platyceratids described in this paper. Nucleus and first whorl not preserved, but from the general configuration probably coiled in contact, hence specimen referable to *Platyceras*. Surface ornament not preserved.

*Measurements.* Length 14 mm.; height 10.5 mm.; aperture width 7.5 mm.

*Occurrence.* The single specimen was collected in the Upper Quarry, and is in the M.U.G.D. collection, No. 2181.

#### Genus **Orthonychia** Hall, 1860

#### **Orthonychia marblecreekensis** n.sp.

(Pl. VII, fig. 22)

*Description.* Moderately large, irregularly horn-shaped gastropod, expanding rapidly, but not coiled. Whorl section completely irregular, the shape varying with the position of the whorl section, but generally sub-rhomboidal. Nucleus not preserved, but the fragment lacking is so small that without doubt it was not coiled in contact. Apertural margin extremely irregular, undoubtedly markedly influenced by the substratum to which the animal was attached. Surface ornament variable; the entire surface, except for the relatively early growth stages, lumpy, becoming increasingly thrown into unequal, irregular folds towards the aperture, there being five such folds on the specimen under investigation, with one fold, rectangular in cross-section, and formed at the margin of the flattened base, running almost the entire length of the shell. Partial coil of the shell dextral if oriented to lie on the flattened base. Rate of growth under the beak approximately one-seventh that in a line furthest from the beak. Growth lines irregular, unevenly spaced. Shell thin and black, of unknown structure.

*Measurements.* Maximum apertural width 16 mm.; maximum length of shell 33 mm.; minimum length of shell under beak 4.5 mm.

*Type.* Holotype M.U.G.D. 2171.

*Occurrence.* Lower Quarry (rare).

#### **Orthonychia pentalvea** n.sp.

(Pl. VII, figs. 28, 29)

*Description.* Moderately large horn-shaped gastropod, completely uncoiled, although nucleus itself coiled almost in contact. Whorl section sub-circular. Surface ornament a relatively uniform series of growth lines. Shell surface folded into five

furrows, four of them rounded, and two of them situated under the beak, with one of the other two on either side; the fifth, on the outermost side, very flat and vaguely divided by an ill-defined ridge running down the centre. The five radial depressions separated by rounded ridges approximately twice as wide as the furrows. Growth lines well-defined, showing that the ridges corresponded to five rounded re-entrants in the apertural margin separated by one broad and four sharply rounded tongues corresponding to the furrows on the surface of the shell. The two furrows under the beak characterized by regularly spaced, well-defined "chisel-marks", with outline corresponding to that of the growth lines. Rate of growth almost uniform throughout. Shell quite thin, and of unknown structure.

*Measurements.* Height of shell 28 mm.; maximum length along shell 55 mm.; thickness at aperture 18 mm.

*Type.* Holotype M.U.G.D. 2170.

*Occurrence.* Lower Quarry (rare).

### *Orthonychia* sp.

*Description.* Small, asymmetrical, very rapidly expanding, low, patelliform gastropod. Whorl section circular. Nucleus cannot be excavated, but strongly bent dextrally. Surface ornament not preserved. Rate of growth under the beak very much less than elsewhere, resulting in the flat shape, with a twisted beak posteriorly. Specimen too poorly preserved to be specifically assigned.

*Measurements.* Width 11.5 mm.; length 12 mm.; height 3.5 mm.

*Occurrence.* Upper Quarry. Represented by M.U.G.D. 2182, to which the above measurements refer.

## Systematic Descriptions of Pelecypods

### Genus *Rhombopteria* Jackson, 1890

Jackson proposed this genus in his classical work on pelecypod phylogeny. He designated *Avicula mira* Barrande as type species, and referred five other species to that genus as follows: *A. pseudomira* Barrande, *A. cognata* Barrande, *A. scala* Barrande, *A. patricia* Barrande and *A. glabra* Munster, all of which are figured on Plates 226 to 228 of Volume 6 of Barrande's *Système Silurien du Centre de la Bohême*.

Jackson made no mention of the surface ornament which we consider characteristic of this genus. This ornament is well shown on Barrande's plates to consist of widely spaced sub-concentric lamellae, which, towards their margins, are covered by fine, intersecting, sub-radial lirae, giving a criss-cross appearance to the surface. Northrop (1939, p. 198) and the Termiers (1950, Fas. 3, p. 84) also make note of this surface ornament for *Rhombopteria*. With this emphasis on surface ornament it appears that two species referred to *Rhombopteria* by Jackson (*Avicula patricia* Barrande and *Avicula glabra* Munster) should be accommodated elsewhere, and another of Barrande's species, *Avicula palliata* (Pl. 220), would now be referable to *Rhombopteria*. With the exception of *R. palliata* from the f2 of Bohemia, *Rhombopteria* appears to be a predominantly Silurian form.

*Rhombopteria anfractaviara* n.sp.

(Pl. VI, fig. 10; Pl. VII, fig. 20)

*Description.* Sub-quadrate shell, with oblique body chamber and both anterior and posterior wings developed. Hinge line straight, with umbos anterior, that of the left valve being incurved over the hinge line. Biconvex, with left valve showing greater convexity than the right. Body of shell inflated, but not well differentiated from the wings, making an angle of about  $70^\circ$  with the hinge line. Greatest length about half way between the hinge line and the lower margin. Both byssus and ligament area apparently absent. Internal features unknown.

Surface ornament of strong, widely spaced growth lamellae with the maximum width of the outside lamella about one-third of the maximum height of the shell at all stages of growth. Radial grooves on the upper surfaces of the lamellae becoming further apart with increase in distance from the umbos, being, e.g., about .4 mm. apart and .1 to .2 mm. across towards the margin of a specimen 19 mm. high. Grooves crossing and bifurcating towards the top of each lamella, then continuing more or less uninterrupted to its margin, with an angle of  $30^\circ$  between the two sets of grooves. Grooves extending through the shell material and thus occurring on the internal cast. Well preserved surfaces showing very fine, irregular growth lines about .1 mm. apart.

*Measurements.* The holotype, the left valve of a mature specimen, has the following dimensions: Maximum length, 18 mm.; maximum height, 19 mm.; maximum thickness, 7 mm.; length along hinge line, 13 mm.

*Type.* Holotype M.U.G.D. 2270. Paratype M.U.G.D. 2271.

*Occurrence.* The species is common in the Lower Quarry, but only one specimen is recorded from the Upper Quarry.

*Discussion.* The new species is proportionally longer along the hinge line than the North American *Rhombopteria implexa* Northrop. Among the Bohemian species it is most closely comparable with *R. palliata* Barrande, but the body of the shell is more oblique.

Genus *Conocardium* Bronn, 1835*Conocardium angelicum* n.sp.

(Pl. VII, figs. 23-25)

*Description.* Shell gibbous, almost as wide as long, circular in transverse section at the beaks. Beaks posterior, incurved slightly to the posterior over the straight hinge line. Posterior wing of holotype damaged, but apparently truncate, with a very small rostrum oblique to the hinge line. Body of shell prominent, inflated, with broadly rounded outlines and covered with about eight prominent angular ribs with wide interspaces. Body ribs separated rather arbitrarily from the eight radial ribs of the posterior flank which become more flattened down the flank. Posterior wing of shell showing only the most prominent growth lines. Anterior flank with six radial ribs, much finer than the body ribs, and with the close growth lamellae of the anterior wing continuing over into this area, giving it a characteristically reticulate appearance. Anterior wing ornamented essentially with close growth lamellae about .2 mm. apart, with or without very fine discontinuous radial ribs. Angle between the last rib of the anterior flank and the hinge line about  $40^\circ$ . Anterior gape large, sub-circular in anterior outline, becoming progressively more denticulated along its margins towards the posterior.

*Measurements.* The measurements of the holotype are: height, 8.6 mm.; length, 9.8 mm.; width, 7.4 mm.

*Type.* Holotype M.U.G.D. 2277. Paratype M.U.G.D. 2278.

*Occurrence.* Upper Quarry (rare).

*Discussion.* The new species, *C. angelicum*, has different ribbing and a more erect body chamber than *C. bellulum* Cresswell, said by Chapman (1908) to be "an abundant species in the dark-blue limestone of Deep Creek, a tributary of the Thomson River, Gippsland, 7 miles N. of Walhalla." This is obviously meant to read "7 miles E. of Walhalla", which places the locality as the Deep Creek limestone deposits, generally regarded as lying on the same strike as the Toongabbie limestone lenses, and possibly equivalent in age. *C. bellulum* is a homonym, and is corrected below.

Comparison can be drawn with the North American species *C. ventricosum* Hall from the Cedar Valley Limestone, and with *C. reflexum* Zeiler from the Siegenian of Europe. It differs from both of these in detailed surface ornament.

#### CORRECTION OF A HOMONYM IN THE GENUS CONOCARDIUM *Conocardium cresswelli* n. name

*Pleurorhynchus bellulus* Cresswell (not Barrande) 1893, *Proc. Roy. Soc. Vic.*, Vol. 5, p. 43, Pl. IX, fig. 6.

*Conocardium bellulum* Chapman 1908, *Mem. Nat. Mus. Melb.*, No. 2, p. 45.

*Conocardium bellulum* Fletcher 1943, *Rec. Aust. Mus.*, Vol. 21, p. 234, Pl. 8, figs. 3, 4.

During a survey of the literature it was noted that Cresswell's trivial name was preoccupied by *C. bellulum* Barrande (1881, Pl. 202). As with *C. costatum*, Cresswell's meagre description and figures do not adequately define this species. Both these species are found in the limestone at Cave Hill, Lilydale.

#### Genus *Actinopteria* Hall, 1883

#### *Actinopteria meridionalis* n.sp.

(Pl. VII, fig. 19)

*Description.* Oblique, pterinoid shell, with body of shell not well differentiated from the well developed posterior wing. Anterior wing probably very much suppressed, and umbos nearly terminal. Biconvex, with long straight hinge line; ligament area not in evidence. Body of shell oblique, ovoid, and making an angle of about 40° with the hinge line. Musculature and teeth not known. Surface covered by fairly strong radial ribs spaced about .7 mm. apart, 20 mm. from the umbo, with a weak rib between each of these strong ribs, although the succession may be broken towards the margins. Ribs crossed by irregular growth lamellae a few mm. apart, with the radial ribs not continuous over them. Finer growth lines also present, particularly towards the posterior wing.

*Measurements.* The measurements of the holotype, which is a left valve, are: maximum length, 36 mm.; height, 23 mm.; thickness, 8 mm.

*Type.* Holotype M.U.G.D. 2275. Paratype M.U.G.D. 2276.

*Occurrence.* This species appears to be confined to the Upper Quarry, where it is common.

*Discussion.* The distinctive surface ornament, as well as the oblique body chamber, distinguishes this species from the other previously described Victorian species referred to this genus. However, many of Chapman's generic placements need revision in the light of later work.

Genus *Pterinea* Goldfuss, 1832

*Pterinea concentrilamellata* n.sp.

(Pl. VII, figs. 30, 31)

*Description.* Species known only from right valve. Pterinoid, sub-quadrate shell with body fairly well differentiated from the wings. Both anterior and posterior wings well developed. Body of shell making an angle of about  $70^\circ$  with the hinge line. Maximum length along hinge line, although approximately the same as the length half way from the hinge line to the ventral margin. Right valve convex in early stages of growth (for the first 7 mm. in the holotype) then becoming strongly resupinate, forming a trail 3 mm. wide. Internal structure and left valve unknown.

Ornamentation of very fine growth lines about .1 mm. apart, separating much stronger, coarse lamellae (five coarse lamellae on the surface of the holotype). Coarse lamellae becoming progressively stronger and further apart with increasing distance from the umbo, the last being about 2 mm. from the trail. All these strong lamellae are broken, but from portion of the external mould it can be seen that these lamellae form well-developed flanges, and probably represent earlier stages of resupination.

*Measurements.* Length along hinge line (maximum length), 13 mm.; maximum height, 14 mm.

*Type.* Holotype M.U.G.D. 2273. Paratype (external mould of holotype) M.U.G.D. 2274.

*Occurrence.* Lower Quarry (rare).

*Discussion.* This new species agrees with the characters delineated for the *Pterinea lacvis* group (*Pterinea* s.s.) by Williams (1908) in his revision of the genus *Pterinea* Goldfuss. It differs from other species referred to this genus in the very strong resupination of the right valve, and in the surface ornament of concentric flanges.

The only other Victorian species referred unquestionably to this species was *P. lineata* Goldfuss recorded by Chapman (1908). By subsequent designation this species has become the type species of the genus *Tolmaia* Williams (1908).

### Systematic Description of Nautiloid

Genus *Anaspyroceras* Shimizu and Obata, 1935

*Anaspyroceras cultellus* n.sp.

(Pl. VI, figs. 7-9)

*Description of holotype.* Part of a slowly expanding phragmocone with circular section, about 24 mm. long, and increasing in diameter from 10 mm. to 11.5 mm. Siphuncle central, and about 2 mm. wide.

Surface with prominent, rounded, regularly spaced, symmetrical annulations, running transversely, and almost straight. Interspaces between annulations having the same shape as them but slightly broader, four annulations occupying a length equal to the diameter of the conch. Annulations crossed by seventeen longitudinal ridges, separated by broad areas seemingly without longitudinal ornament.

Height of camerae very regular, with each septum one camera deep. Sutures located in the grooves between successive annulations, apparently parallel to them. Cameral deposits absent. Septal necks short and orthochoanitic or slightly suborthochoanitic. Connecting rings thin, extending from the tip of the septal neck to the tip of the preceding neck, expanding only very slightly between septal foramina.

*Description of paratypes.* Four fragments of a specimen about 3.5 mm. in diameter, with exactly the same surface ornament and general configuration as the holotype, but with the siphuncle nearer the margin than in the holotype. Thus in a specimen 4 mm. wide the siphuncle was 1 mm. from the margin.

*Types.* Holotype M.U.G.D. 2265. Paratypes (all fragments of the same specimen) M.U.G.D. 2266, 2267, 2268, 2269.

*Occurrence.* Both specimens were found in the Lower Quarry.

*Discussion.* Due to the confusion which resulted from Shimizu and Obata's (1935) erection of numerous poorly defined genera of annulated orthoceraconic nautiloids, the new species has been placed in their genus with a certain amount of hesitation. Flower (1943), as far as is at present possible, has clarified this confusion, but future work could possibly place this species in the imperfectly known genus *Subsphyroceras*.

The excentric siphuncle in the immature paratypes of this species indicates either a certain amount of flux in position of the siphuncle or, more likely, that at early growth stages the siphuncle is located nearer the margin.

*Anasphyroceras anzaas* Teichert and Glenister (Upper Ordovician, Tasmania) differs from the new species in being slightly curved, having different surface ornament, and an excentric siphuncle at all growth stages.

#### Literature Cited

- BARRANDE, J., 1881. Système Silurien du centre de la Bohême. Vol. 6, Tome 1-4.  
 BRANSON, C. C., 1942. Concardiidae (Unit 5B) in Type Invert. Fossils of North America (Devonian). *Wagner Free Inst. Sci.*, 30 cards.  
 CHAPMAN, F., 1907. Newer Silurian Fossils of Eastern Victoria, Part 2. *Rec. Geol. Surv. Vic.*, II, Pt. 1; 67-80, 8 pls.  
 ———, 1908. Monograph of Silurian Bivalved Mollusca of Victoria. *Mem. Nat. Mus. Melb.*, No. 2, 5-62.  
 ———, 1916. New or Little-known Victorian Fossils in the National Museum, Part 19, The Yeringian Gastropod Fauna. *Proc. Roy. Soc. Victoria*, XXIX (N.S.); 75-103, pls. ii-vi.  
 CRESSWELL, A. W., 1893. Notes on the Lilydale Limestone. *Proc. Roy. Soc. Victoria*, V; 38-44, pls. viii, ix, ix a.  
 FLITCHER, H. O., 1943. The Genus *Conocardium* from Australian Palaeozoic Rocks. *Rec. Aust. Mus.*, XXI; 231-243, pls. xiii-xiv.  
 FLOWER, R. H., 1943. Studies of Palaeozoic Nautiloidea, VII, Annulated Orthoceraconic Genera of Palaeozoic Nautiloids. *Bull. Amer. Paleont.*, XXVIII; 102-128.  
 JACKSON, R. T., 1890. Phylogeny of Pelecypods. *Mem. Bost. Soc. Nat. Hist.*, IV (8).  
 KEYES, C. R., 1889. On the Attachment of *Platyceras* to Palaeocrinoids, and its Effects in Modifying the Form of the Shell. *Proc. Am. Ph. Soc.*, XXV; 231-243.  
 KITSON, A. E., 1925. Silurian Limestone at Marble Creek, Thomson River. *Rec. Geol. Surv. Vic.*, IV (4); 443-446.  
 KNIGHT, J. B., 1941. Palaeozoic Gastropod Genotypes. *Geol. Soc. Am.*, Spec. Paper No. 32; 1-510, 96 pls.  
 MAILLEUX, E., 1937. Les Lamellibranches du Dévonien Inférieur de L'Ardenne. *Mus. Roy. d'Hist. Nat. de Belgique*, Mem. 81; 1-273, pls. i-xiv.  
 MURRAY, R. A. F., 1878. Geol. Sketch Map, Sheet 2, South-East Gippsland. *Geol. Surv. Vic.*, Prog. Rep. No. 5; 44-70.  
 NEWBERY, J. C., 1882. Quoted in *Mineral Statistics of Victoria for the Year 1881*; 52.

- NORTHROP, S. A., 1939. Paleontology and Stratigraphy of the Silurian Rocks of the Port Daniel-Black Cape Region, Gaspé. *Geol. Soc. Amer.*, Spec. Paper No. 21; 1-302, 28 pls.
- SHIMIZU, S., and OBATA, T., 1935. New Genera of Gotlandian and Ordovician Nautiloids. *Jour. Shanghai Sci. Inst.*, Sec. 2, II; 1-10.
- TEICHERT, C., and GLENISTER, B. F., 1953. Ordovician and Silurian Cephalopods from Tasmania, Australia. *Bull. Amer. Paleont.* XXXIV (144); 1-66, pls. i-viii.
- TERMIER, H., and TERMIER, G., 1950. Paléontologie marocaine, tome 2, Invertébrés de l'Ere Primaire, fasc. 3, Mollusques. *Notes et Mem. Serv. Geol. Maroc.*, No. 78.
- THOMAS, D. E., 1942. The Conglomerates in the Gould-Platina Districts, Gippsland, Victoria. *Mining and Geological Journal*, II (6); 357-360.
- WILLIAMS, H. S., 1908. On the Revision of the Mollusc Genus *Pterinea* Goldfuss. *Proc. U.S. Nat. Mus.*, XXXIV; 83-90.

### Explanation of Plates

#### PLATE VI

- Figs. 1, 2, 3, 4.—*Ostlerina delicata* n.gen., n.sp. 1, 2.—Holotype (M.U.G.D. 2164), anterior-dorsal and anterior views,  $\times 1.6$ . 3.—Anterior-dorsal view of paratype (M.U.G.D. 2166),  $\times 1$ , from Upper Quarry. 4.—Anterior-dorsal view of paratype (M.U.G.D. 2165),  $\times 1$ , from Lower Quarry.
- Figs. 5, 6.—*Platyostoma triangularis* n.sp. Holotype (M.U.G.D. 2175),  $\times 1.6$ , ventral and dorsal views, Lower Quarry.
- Figs. 7-9.—*Anaspyroceras cultellus* n.sp. 7, 8.—Lateral and sectioned views of holotype (M.U.G.D. 2265),  $\times 1.5$  approx. 9.—Lateral view of paratype (M.U.G.D. 2266),  $\times 1.5$  approx. Both specimens from Lower Quarry.
- Fig. 10.—*Rhombopteria anfractaziara* n.sp. Holotype left valve (M.U.G.D. 2270),  $\times 1.5$  approx., Lower Quarry.
- Figs. 11, 15.—*Tremanotus cyclocostatus* n.sp. 11.—Paratype (M.U.G.D. 2167),  $\times 1.6$ . 15.—Exterior enlarged,  $\times 8.4$ , to show combination of revolving costellae, tremata, and growth lines. Lower Quarry.
- Figs. 12-14.—*Coaxocarrella cylindrica* n.gen., n.sp. 12.—Holotype (M.U.G.D. 2169),  $\times 2.6$ , showing rectangularity of whorl section; lighting unconventional. Lower Quarry. 13, 14.—Paratype (M.U.G.D. 2280),  $\times 1.4$  approx. Lower Quarry.

#### PLATE VII

- Figs. 16, 17.—*Tremanotus cyclocostatus* n.sp. Holotype (M.U.G.D. 2279),  $\times 1.4$  approx., Lower Quarry.
- Fig. 18.—*Coelocaulus* sp. (M.U.G.D. 2172),  $\times 1$ , Upper Quarry.
- Fig. 19.—*Actinopteria meridionalis*, n.sp. Left valve of holotype (M.U.G.D. 2275),  $\times 1.4$ , Upper Quarry.
- Fig. 20.—*Rhombopteria anfractaziara* n.sp. Left valve paratype (M.U.G.D. 2271),  $\times 1.6$  approx., Lower Quarry.
- Fig. 21.—*Platyceras decorum* n.sp. Holotype (M.U.G.D. 2173),  $\times 2.5$ , lateral view, Lower Quarry.
- Fig. 22.—*Orthonychia marblecreekensis* n.sp. Lateral view of holotype (M.U.G.D. 2171),  $\times 1$ , Lower Quarry.
- Figs. 23-25.—*Conocardium anglicum* n.sp. Right valve, oblique right valve and ventral views of holotype (M.U.G.D. 2277),  $\times 1.4$  approx., Upper Quarry.
- Figs. 26, 27.—*Platyceras trirotundolobatum* n.sp. Lateral and anterior-dorsal views of holotype (M.U.G.D. 2168),  $\times 1$ , Lower Quarry.
- Figs. 28, 29.—*Orthonychia pentalvea* n.sp. Lateral and dorsal views of holotype (M.U.G.D. 2170),  $\times 1$ , Lower Quarry.
- Figs. 30, 31.—*Pterinea concentricamellata* n.sp. Counterparts of right valve of holotype (M.U.G.D. 2273 and 2274 respectively),  $\times 1.4$  approx., Lower Quarry.